

RESERVOIR SEDIMENT  
DATA SUMMARY

DEPARTMENT OF THE ARMY  
CORPS OF ENGINEERS

KEYSTONE LAKE  
NAME OF RESERVOIR

45-57

DATA SHEET NO.

DAM	1. OWNER <u>Dept. of Army, C of E</u>		2. STREAM <u>Arkansas River</u>		3. STATE <u>Oklahoma</u>		
	4. SEC. 4 & 9 TWP. <u>19N</u> RANGE <u>10E</u>		5. NEAREST P O <u>Sand Springs, Ok</u>		6. COUNTY <u>Tulsa</u>		
	7. LAT <u>36° 09' 05" N</u> LONG <u>96° 15' 05" W</u>		8. TOP OF DAM ELEVATION <u>771.0</u>		9. SPILLWAY CREST ELEV. <u>754.0 1/</u>		
RESERVOIR	10. STORAGE ALLOCATION	11. ELEVATION TOP OF POOL	12. ORIGINAL SURFACE AREA, ACRES	13. ORIGINAL CAPACITY, ACRE-Feet	14. GROSS STORAGE, ACRE-Feet	15. DATE STORAGE BEGAN	
	a. FLOOD CONTROL	<u>754.0</u>	<u>55,400</u>	<u>1,216,000</u>	<u>1,879,000</u>	<u>11 Sep 64</u>	
	b. MULTIPLE USE						
	c. POWER	<u>723.0</u>	<u>26,300</u>	<u>351,000 2/</u>	<u>663,000</u>	16. DATE NORMAL OPER. BEGAN	
	d. WATER SUPPLY						
	e. IRRIGATION						
	f. CONSERVATION						
g. INACTIVE	<u>706.0</u>	<u>15,500</u>	<u>312,000</u>	<u>312,000</u>	<u>2 May 68</u>		
17. LENGTH OF RESERVOIR <u>103 3/</u> MILES		AV. WIDTH OF RESERVOIR <u>0.84</u> MILES					
WATERSHED	18. TOTAL DRAINAGE AREA <u>74,506</u> SQ. MI.		22. MEAN ANNUAL PRECIPITATION <u>11.65-31.25</u> INCHES				
	19. NET SEDIMENT CONTRIBUTING AREA <u>18,088 4/</u> SQ. MI.		23. MEAN ANNUAL RUNOFF <u>(46.7) 1.20</u> INCHES				
	20. LENGTH <u>600</u> MILES	AV. WIDTH <u>124</u> MILES	24. MEAN ANNUAL RUNOFF <u>(46.7) 4,788,000</u> AC.-FT.				
	21. MAX. ELEV. <u>14,433</u>	MIN. ELEV. <u>646.8</u>	25. ANNUAL TEMP MEAN RANGE				
	26. DATE OF SURVEY	27. PERIOD YEARS	28. ACCL. YEARS	29. TYPE OF SURVEY	30. NO. OF RANGES OR CONTOUR INT.	31. SURFACE AREA, ACRES	32. CAPACITY, ACRE-Feet
<u>9/1/64 5/</u> <u>9/1/69</u>	<u>-</u> <u>5.00</u>	<u>-</u> <u>5.0</u>	<u>Range</u> <u>Range</u>	<u>79</u> <u>79</u>	<u>55,400</u> <u>55,320</u>	<u>1,879,000</u> <u>1,836,490</u>	<u>0.392</u> <u>0.384</u>
SURVEY DATA	26. DATE OF SURVEY	34. PERIOD ANNUAL PRECIPITATION	35. PERIOD WATER INFLOW, ACRE-Feet			36. WATER INFL. TO DATE, AC.-FT.	
			a. MEAN ANNUAL	b. MAX. ANNUAL	c. PERIOD TOTAL	a. MEAN ANNUAL	b. TOTAL TO DATE
	<u>9/1/69</u>	<u>10.63-35.50</u>	<u>4,039,000</u>	<u>6,858,000</u>	<u>20,195,000</u>	<u>4,039,000</u>	<u>20,195,000</u>
	26. DATE OF SURVEY	37. PERIOD CAPACITY LOSS, ACRE-Feet			38. TOTAL SED. DEPOSITS TO DATE, ACRE-Feet		
a. PERIOD TOTAL		b. AV. ANNUAL	c. PER SQ. MI.-YEAR	a. TOTAL TO DATE	b. AV. ANNUAL	c. PER SQ. MI.-YEAR	
<u>9/1/69</u>	<u>42,510</u>	<u>8,502</u>	<u>0.47</u>	<u>42,510</u>	<u>8,502</u>	<u>0.47</u>	
26. DATE OF SURVEY	39. AV. DRY WGT., LBS. PER CU. FT.	40. SED. DEP., TONS PER SQ. MI.-YR.		41. STORAGE LOSS, PCT.		42. SED. INFLOW, PPM	
		a. PERIOD	b. TOTAL TO DATE	a. AV. ANN.	b. TOT. TO DATE	a. PERIOD	b. TOT. TO DATE
<u>9/1/69</u>	<u>59.46</u>	<u>608.67</u>	<u>608.67</u>	<u>0.452</u>	<u>2.26</u>	<u>2,006</u>	<u>2,006</u>

26. DATE OF SURVEY	43. DEPTH DESIGNATION RANGE IN FEET BELOW, AND ABOVE, CREST ELEVATION														
	108-100	100-90	90-80	80-70	70-60	60-50	50-40	40-31	31-20	20-10	Crest	-10			
PERCENT OF TOTAL SEDIMENT LOCATED WITHIN DEPTH DESIGNATION															
9/1/69	CIMARRON RIVER ARM														
	0	3.3	5.3	5.8	6.8	5.2	9.9	6.8	-1.5	-1.8	-1.8				
ARKANSAS RIVER ARM															
	1.6	6.4	-0.2	3.0	4.4	10.6	21.6	14.9	0	-0.2	-0.1				
26. DATE OF SURVEY	44. REACH DESIGNATION PERCENT OF TOTAL ORIGINAL LENGTH OF RESERVOIR														
	0-10	10-20	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100	-105	-110	-115	-120	-125
PERCENT OF TOTAL SEDIMENT LOCATED WITHIN REACH DESIGNATION															
9/1/69	CIMARRON RIVER ARM														
	9.6	7.8	5.6	4.7	11.9	-3.6	1.7	0.2	0.1	0					
ARKANSAS RIVER ARM															
	7.3	4.8	6.0	12.1	23.8	7.7	0	-0.1	0.1	0.3					
45. RANGE IN RESERVOIR OPERATION															
WATER YEAR	MAX. ELEV.	MIN. ELEV.	INFLOW, AC.-FT.	WATER YEAR	MAX. ELEV.	MIN. ELEV.	INFLOW, AC.-FT.								
1964 (1 Mo)	668.4	-	247,500												
1965	728.2	668.0	6,858,000												
1966	726.1	721.4	1,979,000												
1967	728.6	715.2	2,609,000												
1968	727.2	721.5	2,903,000												
1969 (11 Mo)	728.7	717.2	5,599,000												
46. ELEVATION-AREA-CAPACITY DATA															
ELEVATION	AREA	CAPACITY	ELEVATION	AREA	CAPACITY	ELEVATION	AREA	CAPACITY							
ORIGINAL	AREA-CAPACITY		1969	AREA-CAPACITY											
648	0	0	654	0	0	720	23586	543906							
660	940	4300	660	365	1113	723	26017	617992							
690	8520	122800	680	4588	46810	730	31741	820831							
706	15550	311800	690	8142	108812	735	35770	988467							
723	26300	663000	700	11824	208684	740	39573	1176334							
740	39590	1220000	706	14490	287465	745	44625	1386832							
754	55400	1879000	710	16289	349175	750	50320	1624204							
760	63830	2236000	715	19197	437441	754	55320	1836490							
						760	62558	2193701							
47. REMARKS AND REFERENCES															
1/ Top of tainter gates in closed position; actual spillway crest elev. is 719.0.															
2/ Includes 20,000 acre-feet for water supply.															
3/ 49 miles on Arkansas and 54 miles on Cimarron when pool is at elev. 754.0.															
4/ Normally contributing drainage area is considered to be that area below the original gate locations at Waynoka on the Cimarron and Hutchinson on the Arkansas (22,351 sq. mi.) less Cow Creek (952 sq. mi.), the drainage areas above Cheney (901 sq. mi.), Great Salt Plains (3200 sq. mi.), Lake Carl Blackwell (75 sq. mi.), and the Keystone Lake area at elevation 754.0 (87 sq. mi.).															
5/ For computation purposes, 9/1/64 was used for date of first survey.															
48. AGENCY MAKING SURVEY Dept. of the Army, Corps of Engr., Tulsa District															
49. AGENCY SUPPLYING DATA Corps of Engr., Dept. of the Army															
										50. DATE		24 Mar 72			